

### **REMARKS/ARGUMENTS**

In this amendment, claims 1, 15, and 28 are amended. Claims 35-36 are added. Thus, after entry of this amendment, claims 1-30 and 32-36 will be pending.

#### **Rejections under 35 USC § 103(a), Lu in view of Chatterjee**

Claims 1-10, 13, 28-30, and 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lu (U.S. Patent Application Publication No. 2004/0073747) in view of Chatterjee et al. (U.S. Patent Application Publication No. 2004/0024962) in further view of Moore (U.S. Patent Application Publication No. 2004/0003135) in further view of Rezaul Islam et al. (U.S. Patent No. 6,282,670). Further, the prior art reference of Kim (U.S. Patent Application Publication No. 2002/0069245) is being cited to simply teach inherent features not otherwise discussed by Lu.

#### **Claims 1-14**

Claim 1 is allowable over the cited references, either alone or in combination, as those references fail to teach or suggest all the elements of claim 1. For example, claim 1 recites “*wherein the first physical device object is attached to each functional device object, and wherein each functional device object is associated with a different disk.*”

Lu describes using a software program to behave as a RAID controller. *See Lu*, paragraph 13. Lu mentions that a volume is a portion of a disk drive group that is seen as a single logical drive. *Id.*, paragraph 33. Lu does not provide a description of the RAID controller/driver architecture or model.

Chatterjee also mentions a distribution of physical drives that form a single logical drive. *See Chatterjee*, Figure 4 and paragraphs 36 and 37. Figure 5 shows a driver model, where miniport drivers 506, 508 can control RAID controllers linked to multiple logical disks LD0-LD3. *Id.*, paragraph 42. Thus, a combination of Lu and Chatterjee may simply provide for redundant software RAID controllers, which can have a structure in Figure 5 or Figure 6 of Chatterjee.

In Figures 5 and 6, none of the drivers have a first PDO attached to each FDO associated with a disk of the RAID system. For drivers 506, 508 there is only one FDO and thus

none of the physical device objects (PDOs) are attached to a plurality of functional device objects (FDOs). Also, for TEAM driver 504, a single Team PDO is attached to only one filter device object (FiDO). Although, a Team PDO can attach to different FiDOs at any one time, a PDO is not attached to two FiDOs at the same time. *Id.*, paragraphs 43 and 46. Accordingly, Lu and Chatterjee, alone or in combination, do not teach or suggest a driver including a first physical device object that is attached to each of a plurality of functional device objects of that driver, as recited in claim 1.

Furthermore, the two FiDOs that a Team PDO can attach are both associated with the same disk. *Id.*, FIG. 5 and paragraph 43. Thus the cited references also do not teach “*wherein each functional device object is associated with a different disk,*” as recited in claim 1.

Moore is cited as teaching that a PDO and an FDO appear as a combination; Islam is cited as teaching that the same RAID configuration data that is stored in each disk drive can also be stored in a nonvolatile RAM; and Kim is cited as teaching of drive enumeration for a disk controller driver; however, these teachings, alone or in combination, do not make up for the deficiencies of Lu and Chatterjee.

For at least these reasons, claim 1 is allowable over the cited references. As claim 1 is allowable, dependent claims 2-14 and 36 are also allowable for at least the same rationale.

#### Claims 28-35

Applicants submit that independent claim 28 should be allowable for at least the same reasons as claim 1. For example, claim 28 recites “*binding a respective RAID-specific functional interface to each disk having a RAID-specific device identification; binding all of the RAID-specific functional interfaces to a same disk object representing the entire RAID system.*”

As claim 28 is allowable, dependent claims 29-35 are also allowable for at least the same rationale.

#### **Rejections under 35 U.S.C. § 102(e), Lu**

Claims 15-19, 21-24, and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Lu in view of Islam, where Moore and Kim are being cited simply to teach inherent features not explicitly discussed in Lu.

Claim 15 is allowable as Lu does not teach or suggest each and every element of claim 15. For example, claim 15 recites:

*An integrated circuit adapted to perform core logic functions of a computer, the integrated circuit comprising:  
a RAID controller adapted to induce an operating system to load, into a processing unit on another integrated circuit, a RAID class driver having a physical device object representing a RAID system comprised of a plurality of disks; and  
a first disk controller adapted to interface with at least a portion of the plurality of disks and further adapted to induce the operating system to load a disk controller driver, wherein the disk controller driver is adapted to provide RAID-specific device identifications for the portion of the plurality of disks.*

The Office Action asserts that CPU 101 running the RAID software is the RAID controller and that the RAID software is also the RAID driver. *See Office Action*, page 12. However, if the RAID software is already running on the CPU 101 to form the RAID controller then it has already been loaded. Thus, the already-loaded RAID software cannot induce the operating system to load itself. Accordingly, Lu does not teach or suggest “a RAID controller adapted to induce an operating system to load a RAID class driver,” as recited in claim 15.

Additionally, the Office action asserts that the CPU 101 and chipsets 106, 108, and 110 form an integrated circuit. *See Office Action*, page 11. However, as shown in Figure 1, each one of these devices is on a separate integrated circuit and connected by a system peripheral bus 104 to CPU 101. Thus, even if CPU 101 running the RAID software could induce loading itself, disk controller 108 or 110 are not on the same integrated circuit as CPU 101. Also, such a combination would not be obvious or practical since disk controllers control sending data to the CPU and typically reside in a separate chip on the motherboard. Accordingly, Lu does not teach or suggest a RAID controller and a first disk controller on the same integrated circuit, as recited in claim 15.

Furthermore, the asserted RAID controller running on the CPU 101 is asserted to load a RAID driver into the same CPU 101. Thus, Lu does not teach or suggest loading the RAID class driver into a processing unit on another integrated circuit, as recited in claim 15.

The cited teachings of Islam, Moore, and Kim do not make up for the deficiencies of Lu. For at least these reasons, claim 15 is allowable over Lu. As claim 15 is allowable, dependent claims 16-27 are also allowable for at least the same rationale.

**Rejection under 35 USC § 103**

Claims 11-12 and 25-26 are rejected under 35 USC 103(a) as being unpatentable over the references cited above and in further view of U.S. Patent Publication No. 2004/0160975 to Frank et al.

Claim 14 is rejected under 35 USC 103(a) as being unpatentable over references cited above and in further view of U.S. Patent No. 5,163,149 to Brantley Jr. et al.

Claim 20 is rejected under 35 USC 103(a) as being unpatentable over Lu and Islam in view of U.S. Patent No. 5,787,463 to Gajjar.

Claims 11-12 and 14 depend upon claim 1 and are allowable for at least the same rationale as claim 1. Claims 20 and 25-26 depend upon claim 15 and are allowable for at least the same rationale as claim 15.

The cited teachings of Frank, Gajjar, and Brantley Jr., either alone or in combination, do not make up for the deficiencies in the cited references with respect to these claims.

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PATENT

**CONCLUSION**

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance and an action to that end is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,

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